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EXAMINER	
TUNG, KEE M	

ART UNIT	PAPER NUMBER
2671	

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,291	BOOTH ET AL.	
	Examiner	Art Unit	
	Kee M. Tung	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-25,27 and 28* is/are rejected.

7)☒ Claim(s) *2 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed 7/5/05 has been considered in preparing this Office action.

Allowable Subject Matter

1. The indicated allowability of claims 1, 3-14, 17-25, 27 and 28 is withdrawn in view of the newly discovered reference(s) to Hudepohl et al (6,754,804). Rejections based on the newly cited reference(s) follow.

Claim Objections

2. Claims 5 and 16 are objected to because of the following informalities:

As per claim 5, line 1, "the graphics command data" should be –the pixel-stream formatted graphics command data--.

As per claim 16, line 2, "the command data" should be –the formatted command data--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claims 15-18 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

4. As per claim 15, the specification fails to describe "a coprocessor having a second interface to receive formatted command data and output data from application processor and the formatted command data and the output data are in an output data format". The specification suggests "if necessary, the data may be formatted and

organized to fit the form of a pixel-data stream before being transferred across the interface." (par 0032) However, the specification fails to suggest the formatted command data is also in an output data format.

5. As per claim 16, lines 6-7, "a high speed datapath to communicate the formatted command data and **output data** between the first interface and the second interface" is confuse because the lines 3-5, states "the coprocessor having a second interface to receive formatted command data and formatted output data from the application processor, the coprocessor also having an output interface to provide output data to I/O device" only the "formatted output data" communicates between the first and second interfaces and output data outputs to output interface. Furthermore, the specification also fails to suggest the coprocessor received formatted output data from AP and output the output data (after processed by coprocessor) back to AP via high speed datapath. Similar correction is also required for claims 18 and 20.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 3-5, 10, 11, 14, 15, 17-25, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hudepohl et al (6,754,804 hereinafter "Hudepohl") in view of Deering et al (6,753,870 hereinafter "Deering").

As per claim 1, Hudepohl teaches a processing system (Fig. 1) comprising an application processor (102) having a first graphics interface (112a); a coprocessor (110; and col. 5, line 14) having a second graphics interface (112b) to communicate pixel-stream formatted graphics command data and pixel-stream formatted image data with the application processor (col. 5, line 49 to col. 6, line 14. it is noted that in graphics system, the graphics data is considered as in graphics pixel stream formatted in general and the graphics command and/or instruction considered as in pixel stream formatted graphics command data); a high speed datapath (116) between the first graphics interface and the second graphics interface. However, Hudepohl fails to explicitly teach the coprocessor also having a display interface to provide display data to a graphics display. It is noted that it was old and well known and well used and design in graphics system a graphics output device directly coupled to a graphics coprocessor or accelerator. Furthermore, Deering teaches a graphics system (Fig. 2) comprising a CPU (102) connects to a system bus (104) for transferring command and graphics data to a graphics accelerator (112; col. 17, lines 63-65); a main memory (106) also coupled to the system bus (104); a display device (84) coupled to the graphics accelerator (112). Deering further teaches the details of graphics accelerator (Fig. 3) comprising control unit (140); rendering unit (150s); 3DRAM (160s); sample to pixel calculation (170s). Therefore, it would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of Deering into the system of in order to transfer processed graphics data directly to the output device without pass through the system bus and thus to increase the overall processing speed and

performance and also reducing the use of the system bus for displaying. Therefore, at least claims 1, 3-5, 10-11 and 14 would have been obvious.

As per claims 15 and 17, claims are similar in scope to claim 1, and additionally require a coprocessor having a second interface to receive output data in output data format. Well, the coprocessor of Hudepohl is used to offload some processing or computation loads for the application processor, thus the coprocessor is "program" to perform any operation in any format as design and ask by application processor. The application processor is the control processor which can transferred any format data and command to coprocessor including the output format. Thus, It would have been obvious to one of ordinary skill in the art at the time the present invention was made to implement the teachings of Hudepohl in order to transfer the output data format to the I/O device via system bus without further reformat and therefore, at least saves an extra processing or operation. Therefore, at least claims 15 and 17 would have been obvious.

Claims 18-20 are similar in scope to claims 6, 7 and 12, and thus are rejected under similar rationale.

Claims 21-24 are similar in scope to claims 1, 7, 6, and 5, and thus are rejected under similar rationale. It is noted that the coprocessor is used to do what the AP has ask or program to do which includes format or reformat the data (further see claim 15 and 17 above).

Claims 25, 27 and 28 are similar in scope to combination claims of 1, 3, 4 and 12, and thus are rejected under similar rationale.

8. Claims 6-9, 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hudepohl et al (6,754,804 hereinafter "Hudepohl") in view of Deering et al (6,753,870 hereinafter "Deering") as applied to claim 1 above, and further in view of Wichman et al (2004/0227763 hereinafter "Wichman").

The teachings of Hudepohl and Deering are giving in previous paragraph of this Office action. However, the combined system fails to explicitly teach a memory controller and a memory interface to access the system memory by application processor and coprocessor. It is noted that a memory controller and/or interface is an old and well known and well used unit used to access the memory, such as, the bus interface 104 of Hudepohl. Furthermore, Wichman suggests or teaches the processor (102) comprising an instruction prefetch unit (200) and load/store unit (204) to fetch and/or transfer instructions and data between the processor (102) and system memory (108) (see paragraphs 0036 and 0039) and similarly in loose-coupled architecture (Fig. 8) since the coprocessor directly connects to the memory (108), the coprocessor (104) would inherently to include a similarly unit, a memory controller and/or interface for used to accessing the memory (108). Therefore, it would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of well known and well used memory controller and/or interface of Wichman into the combined system in order to allow more efficient and effective access to the system memory and thus to increase the memory access efficiency and better overall system performance. Therefore, at least claim 6 would have been obvious.

As per claim 7, the combined system teaches the application processor further comprises on-die memory (Wichman, par 0058) therein, the AP performs a DMA transfer of graphics data from the on-die memory to the coprocessor over the high-speed datapath, and the AP refrains from transferring the graphics data to the coprocessor over the system bus (Deering, col. 7, lines 16-38).

As per claim 8, Wichman teaches the coprocessor is an integrated part of the graphics display (such as, PDA, wireless phone, par 0006).

As per claim 9, Wichman teaches the graphics display comprises photodiodes (not shown, but is commonly used in LCD type display for PDA, or wireless phone in order to receive the light for display device) to generate image data of a scanned image, and the coprocessor converts the image data to pixel-stream formatted image data for transfer over the high-speed datapath to AP.

As per claims 12 and 13, Wichman teaches an omnidirectional antenna (not shown, but is inherent for any well known wireless phone and/or PDA in order to transmitting and/or receiving signals from other device, par 0006); and a receiver to translate the communication signals to data signals for the AP, the signals including graphics data (such as, in a video wireless phone).

9. Claims 8, 9, 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hudepohl et al (6,754,804 hereinafter "Hudepohl") in view of Deering et al (6,753,870 hereinafter "Deering") as applied to claim 1 above, and further in view of Rostoker et al (5,761,516 hereinafter "Rostoker").

The teachings of Hudepohl and Deering are giving in previous paragraph of this Office action. However, the combined system fails to explicitly teach the coprocessor is an integrated part of the graphics display. Rostoker teaches a single chip multiprocessor architecture with internal task switching synchronization bus comprising an application processor (54) and coprocessor (56); a processor sync bus (74); an on-chip bus (62); a memory controller (58) and a DRAM (66); I/O controller (60) and I/O device (70). Rostoker further teaches the single chip can be used for PDA, wireless phone, etc ... (col. 7, lines 25-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of Rostoker into the combined system in order to allow the combined system to be used in PDA or wireless phone etc ... with better power consummation and high speed processing and reducing cost (in small and wireless device) and thus to also increase the overall system performance. Therefore, at least claim 8 would have been obvious.

As per claim 9, Rostoker teaches the graphics display comprises photodiodes (not shown, but is commonly used in LCD type display for PDA, or wireless phone in order to receive the light for display device) to generate image data of a scanned image, and the coprocessor converts the image data to pixel-stream formatted image data for transfer over the high-speed datapath to AP.

As per claims 12 and 13, Rostoker teaches an omnidirectional antenna (not shown, but is inherent for any well known wireless phone and/or PDA in order to transmitting and/or receiving signals from other device, col. 7, lines 25-35); and a

receiver to translate the communication signals to data signals for the AP, the signals including graphics data (such as, in a video wireless phone).

Allowable Subject Matter

10. Claim 16 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

11. Claims 2 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art made of record fails to anticipate or make obvious the claimed invention. Specially, the prior art fails to suggest or teach, in combination with the reaming elements, the first and second graphics interfaces further comprising first and second drivers, respectively as recited in claims 2, 16 and 26.

Response to Arguments

13. Applicant's arguments with respect to claims 15 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kee M. Tung whose telephone number is 571-272-7794. The examiner can normally be reached on Tuesday - Friday from 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kee M Tung
Primary Examiner
Art Unit 2671